FIG. 1

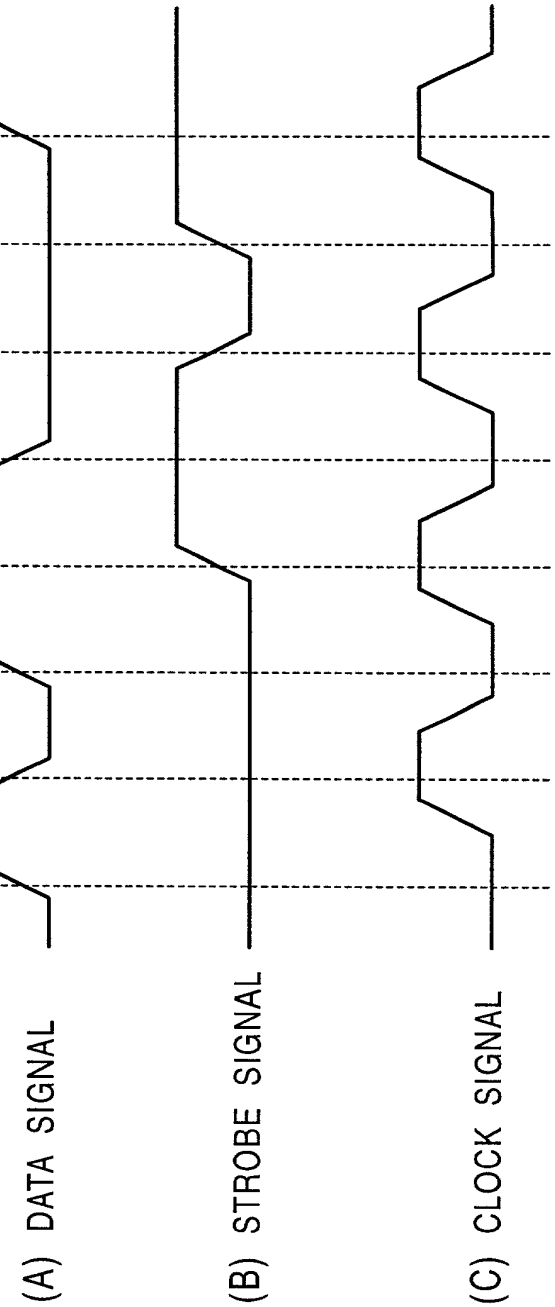


FIG. 2

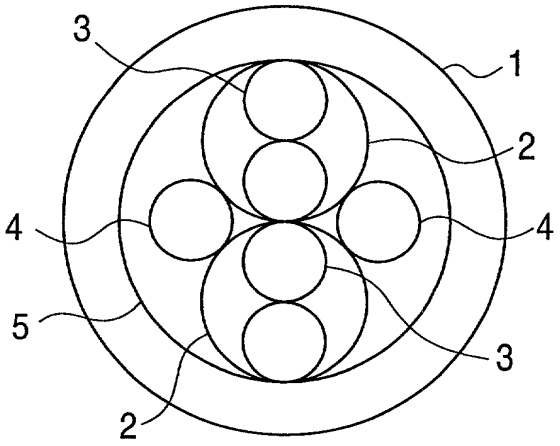

3
1
2
4
4
5
3
2

FIG. 3

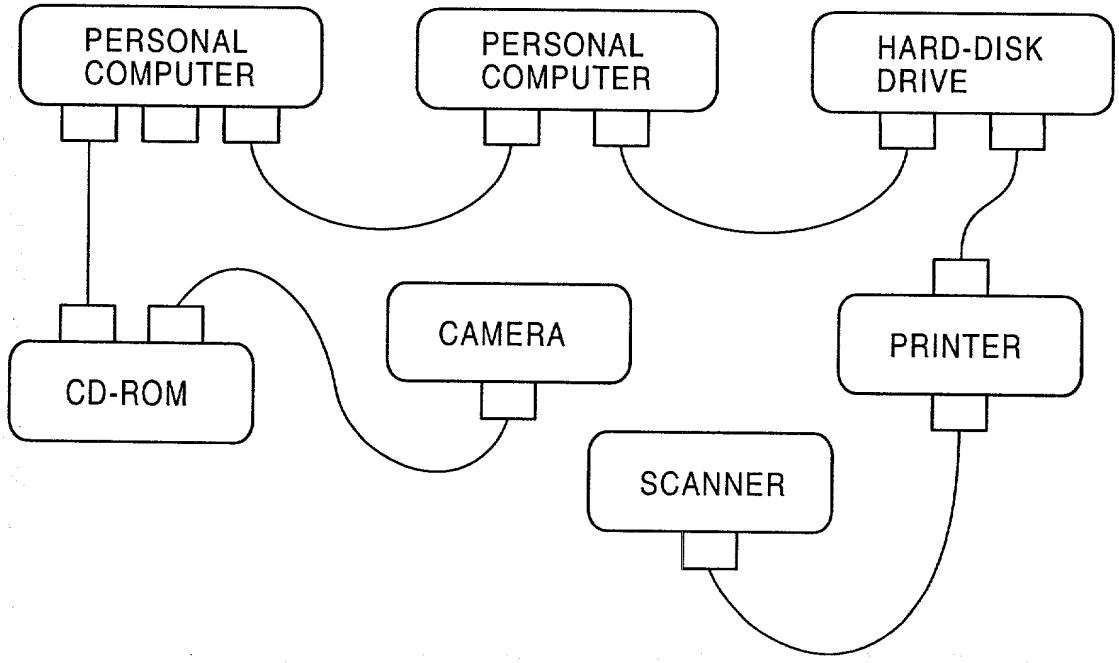

PERSONAL COMPUTER
PERSONAL COMPUTER
HARD-DISK DRIVE
CD-ROM
CAMERA
PRINTER
SCANNER

FIG. 4

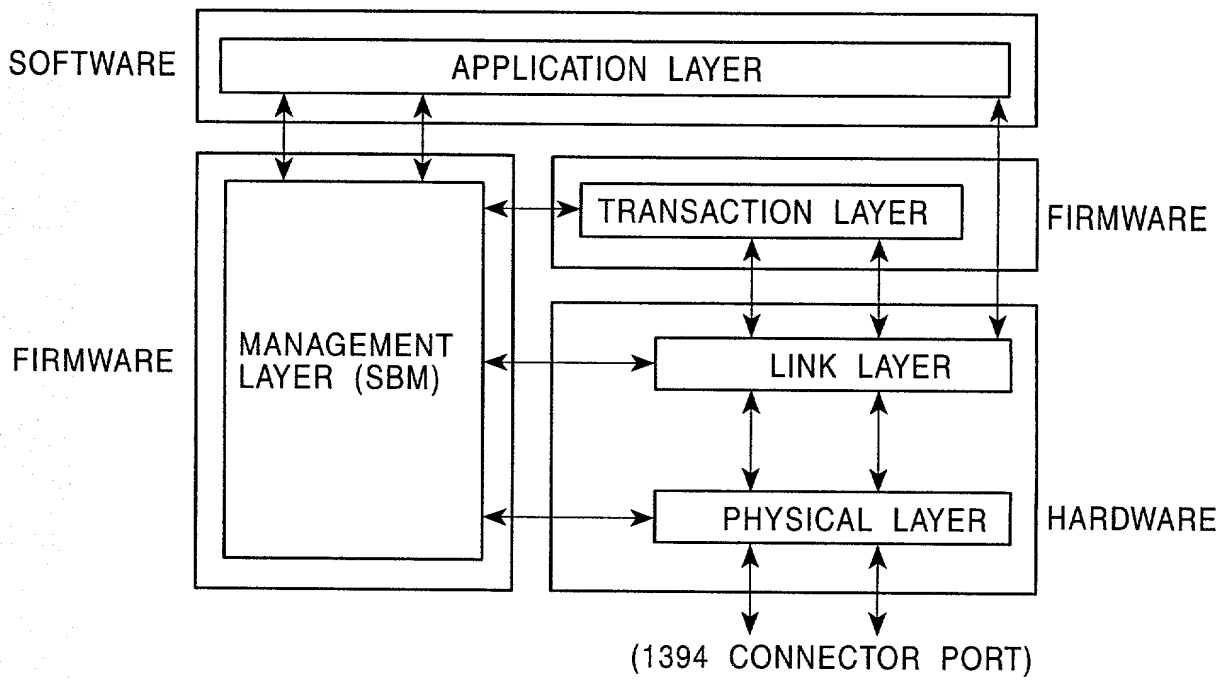

SOFTWARE
APPLICATION LAYER
TRANSACTION LAYER
FIRMWARE
FIRMWARE
MANAGEMENT LAYER (SBM)
LINK LAYER
PHYSICAL LAYER
HARDWARE
(1394 CONNECTOR PORT)

FIG. 5

SUB-ACTION GAP
ARBITRATION
PACKET
ACK GAP
ACK
SUB-ACTION GAP

FIG. 6A

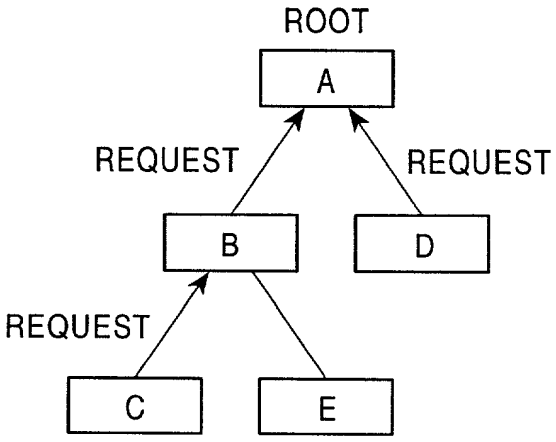
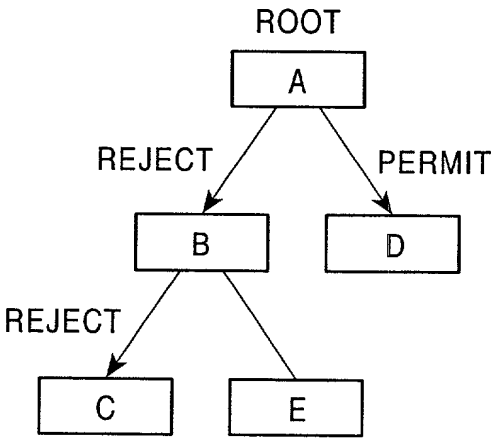

ROOT
A
REQUEST
REQUEST
B
D
REQUEST
C
E

FIG. 6B


ROOT
A
REJECT
PERMIT
B
D
REJECT
C
E

PLACED PROCESSED

FIG. 7

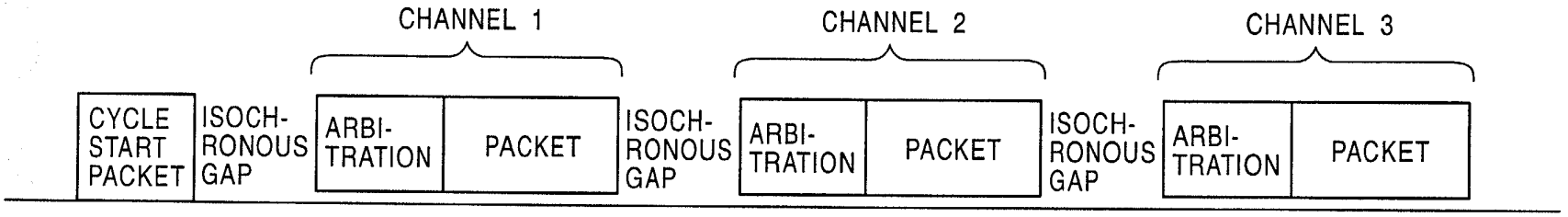


FIG. 8

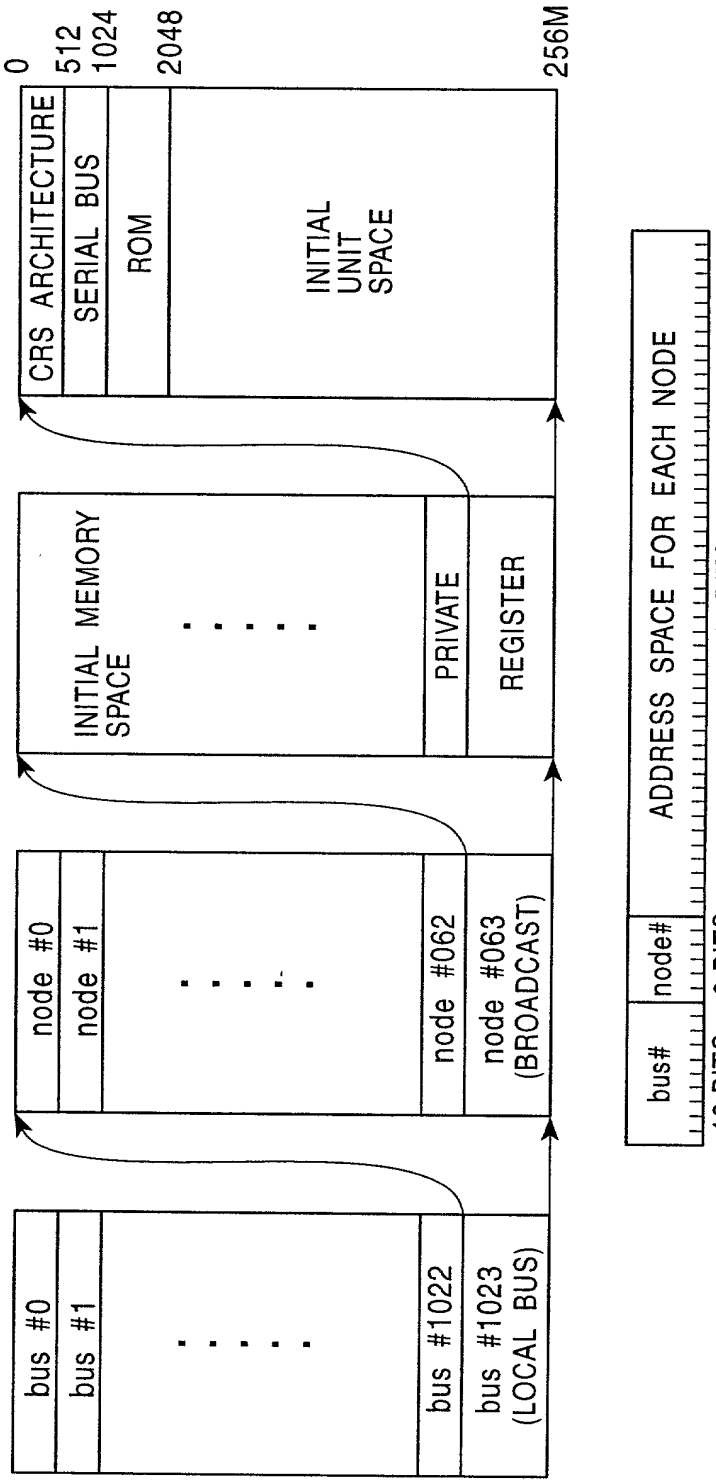

0
512
1024
2048
256M
CRS ARCHITECTURE
SERIAL BUS
ROM
INITIAL UNIT SPACE
INITIAL MEMORY SPACE
PRIVATE
REGISTER
bus #0
bus #1
bus #1022
bus #1023 (LOCAL BUS)
node #0
node #1
node #062
node #063 (BROADCAST)
bus#
node#
ADDRESS SPACE FOR EACH NODE
10 BITS
6 BITS
48 BITS

FIG. 9

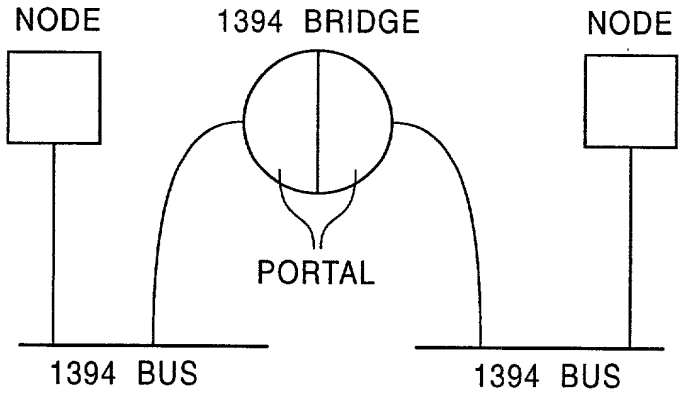


FIG. 10

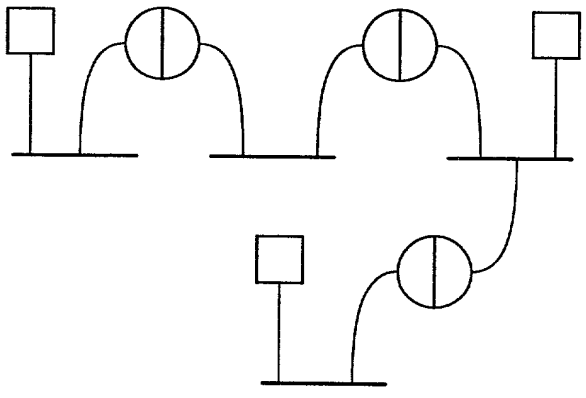


FIG. 11

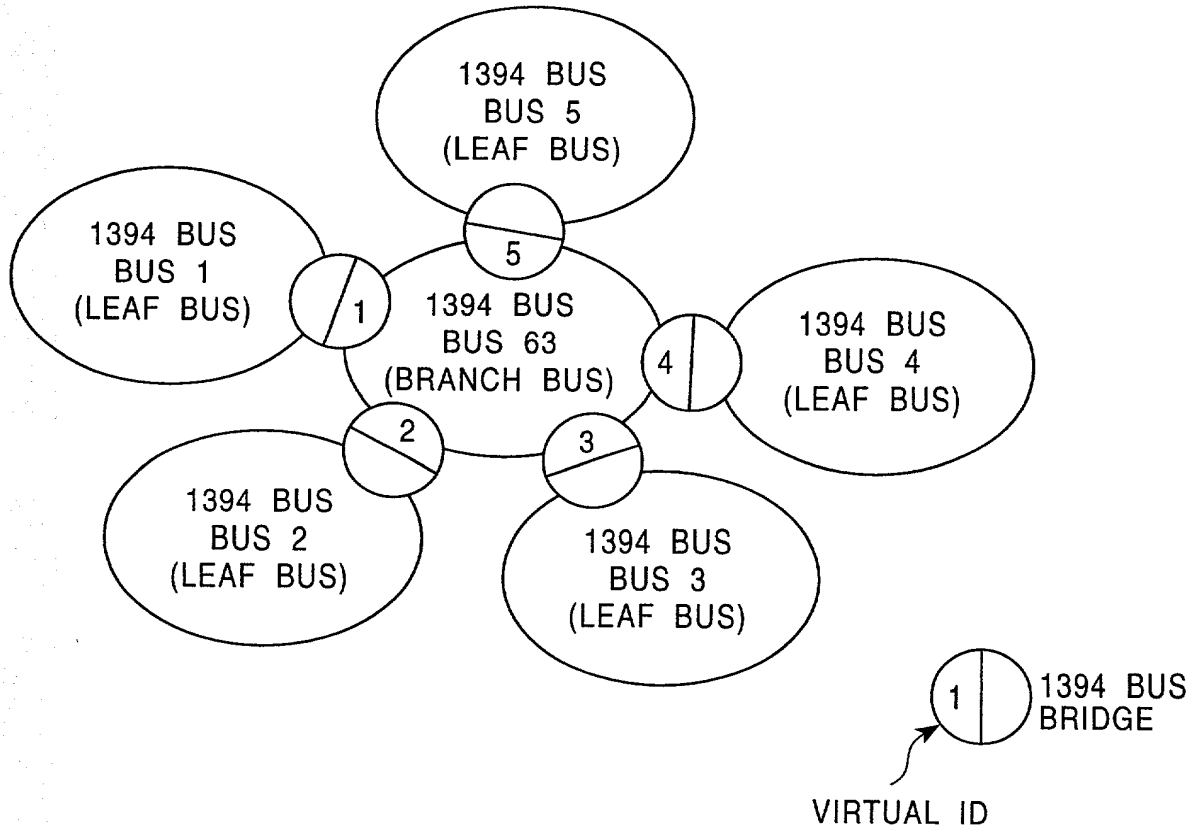
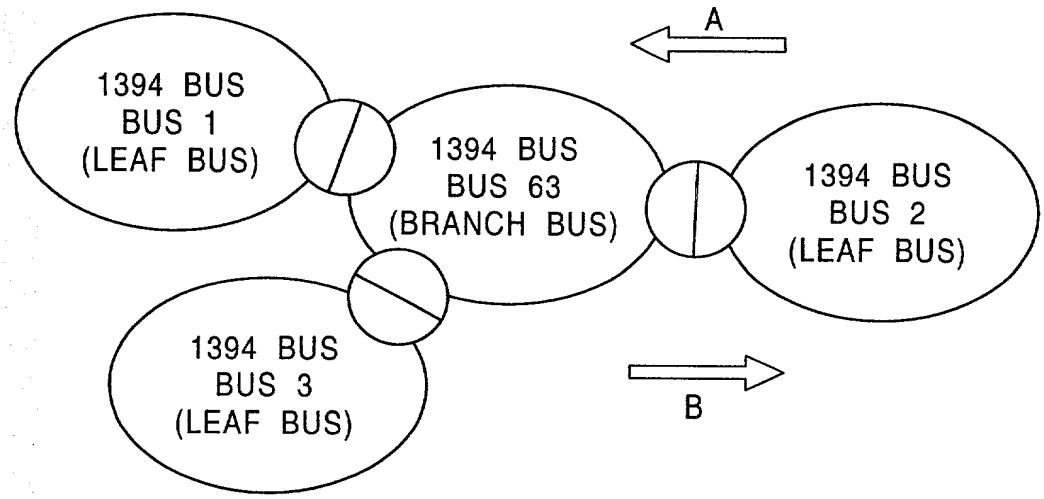

1394 BUS
BUS 5
(LEAF BUS)
1394 BUS
BUS 1
(LEAF BUS)
1
5
1394 BUS
BUS 63
(BRANCH BUS)
4
1394 BUS
BUS 4
(LEAF BUS)
2
3
1394 BUS
BUS 2
(LEAF BUS)
1394 BUS
BUS 3
(LEAF BUS)
1
1394 BUS
BRIDGE
VIRTUAL ID

FIG. 12



DIRECTION A : PACKET HAVING TRANSMISSION DESTINATION OTHER THAN BUS ID 2

DIRECTION B : ONLY PACKET HAVING TRANSMISSION DESTINATION OF BUS ID 2

FIG. 13

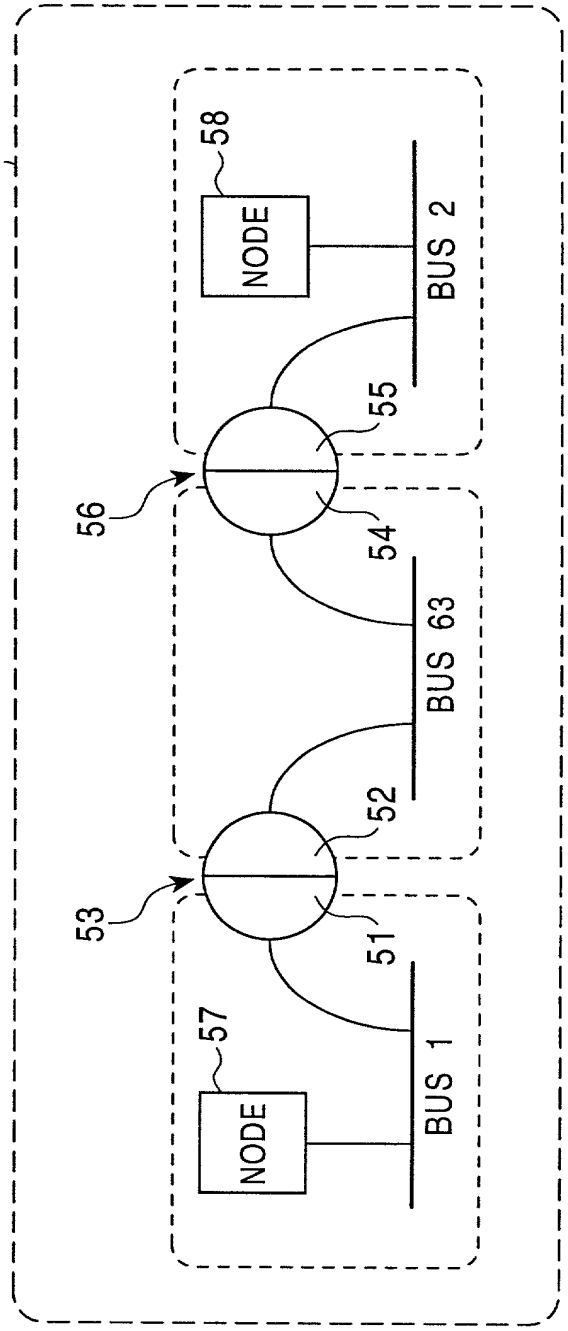


FIG. 14

TRANSMISSION DESTINATION BUS ID	PROCESSING
ID OF BUS TO WHICH THE OTHER-SIDE PORTAL IS CONNECTED	PORTAL RETURNS ack_complete FOR RESPONSE AND ack_pending FOR REQUEST. THEN, PORTAL TRANSMITS PACKET TO THE OTHER-SIDE PORTAL
OTHER THAN ABOVE	PORTAL IGNORES PACKET. (IT IS EXPECTED THAT ANOTHER PORTAL PERFORMS ROUTING.)

FIG. 15

TRANSMISSION DESTINATION BUS ID	PROCESSING
IDS OTHER THAN THAT OF BUS TO WHICH ITSELF IS CONNECTED	PORTAL RETURNS ack_complete FOR RESPONSE AND ack_pending FOR REQUEST. THEN, PORTAL TRANSMITS PACKET TO THE OTHER-SIDE PORTAL.
OTHER THAN ABOVE	PORTAL IGNORES PACKET. (NOT ACCESS TO OTHER BUSES)

FIG. 16

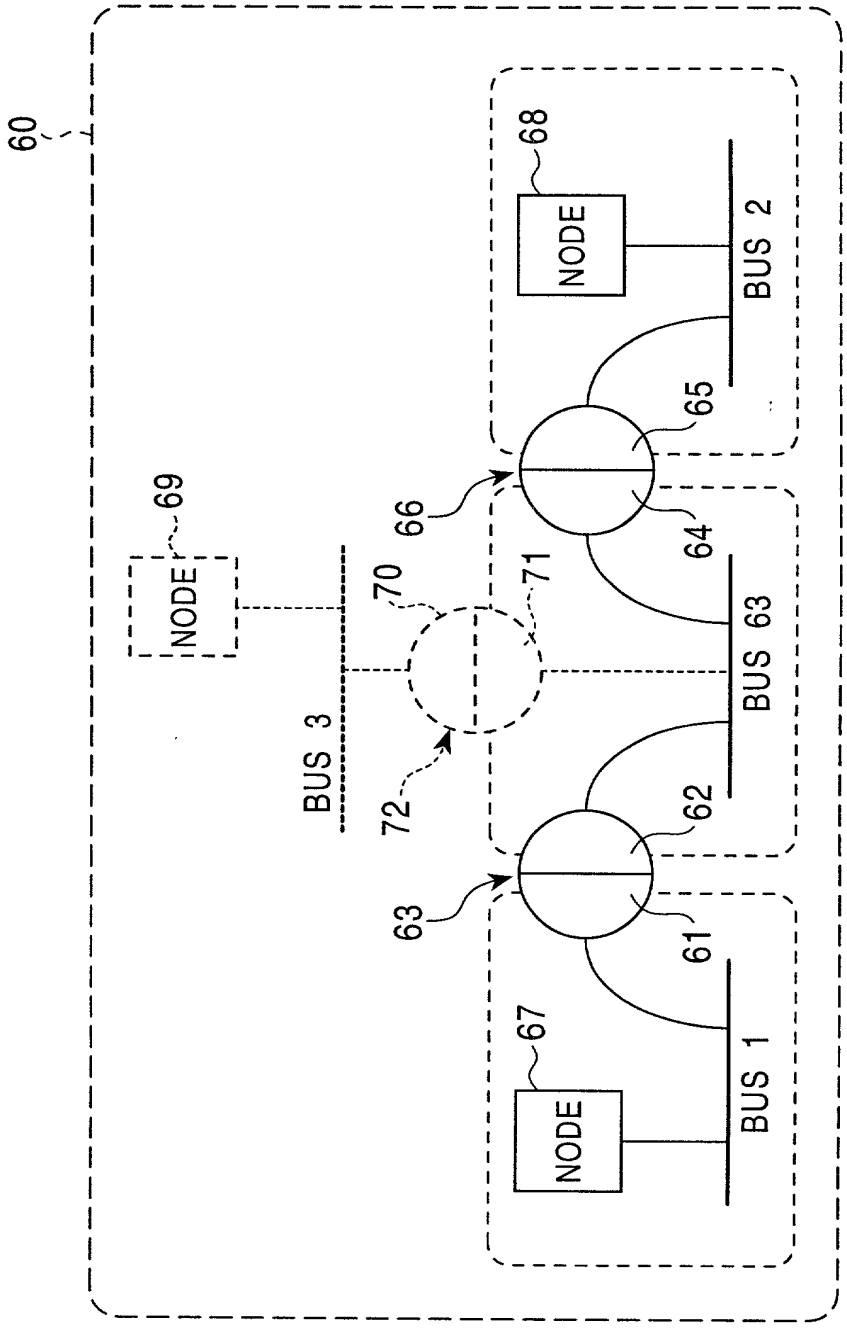

60
NODE
69
BUS 3
70
71
72
66
63
64
62
65
61
NODE
68
BUS 2
BUS 63
NODE
67
BUS 1

FIG. 17

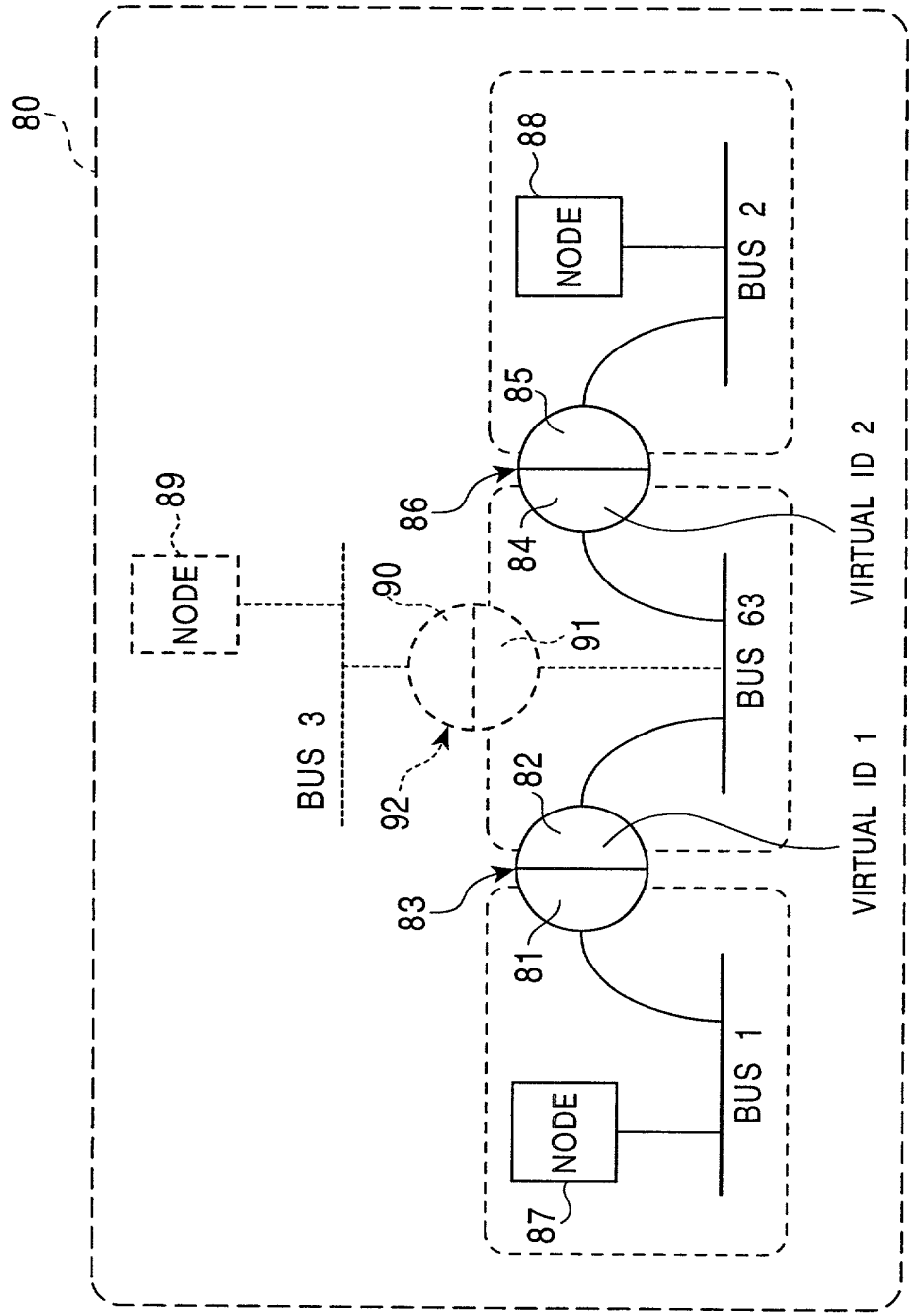

80
NODE
89
BUS 3
90
91
92
BUS 63
BUS 1
BUS 2
NODE
88
NODE
87
81
82
83
84
85
86
VIRTUAL ID 1
VIRTUAL ID 2

FIG. 18A

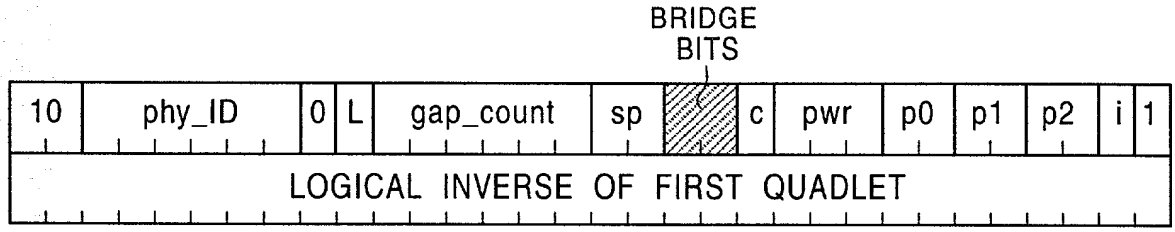


FIG. 18B

VALUE	DEFINITION	REMARKS
00b	NON-BRIDGE DEVICE	CONVENTIONAL 1394 DEVICE
01b	DEVICE WITH BRIDGE FUNCTION	DEVICE HAVING BRIDGE FUNCTION
10b	BRIDGE AS DEFINED BY P1394.1	P1394.1 DEVICE
11b	BRIDGE AS DEFINED BY P1394.1	P1394.1 DEVICE

FIG. 19

NODE ID	RESERVED (2 BITS)	VIRTUAL ID (6 BITS)
0	00	4
1	00	3
2	00	5
3	00	2
4	00	1
5	00	7
6	00	0
7	00	6

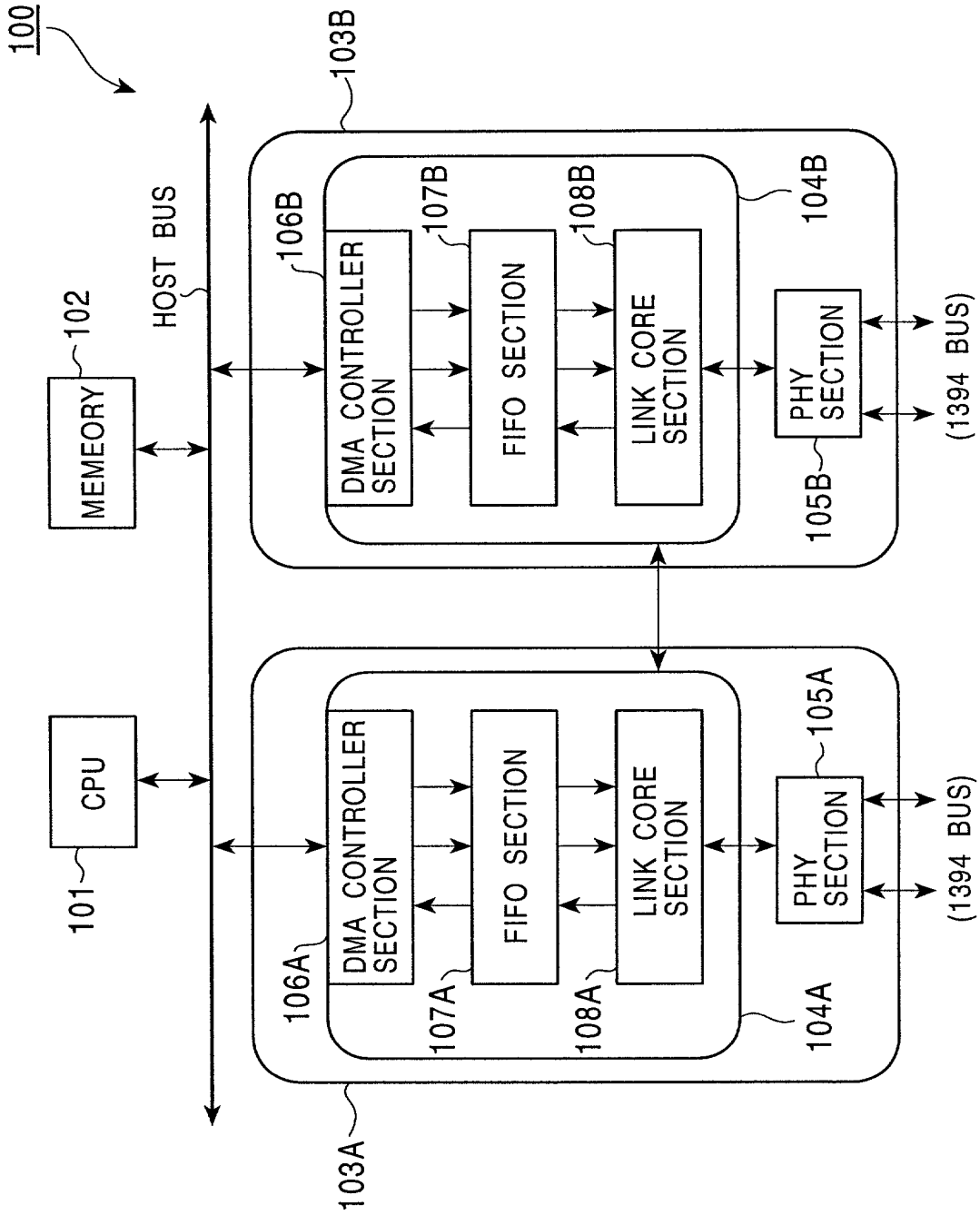
FIG. 20

NODE ID	RESERVED (2 BITS)	BRIDGE (1 BIT)	VIRTUAL ID (6 BITS)
0	00	0	4
1	00	0	3
2	00	0	5
3	00	1	2
4	00	1	1
5	00	0	7
6	00	0	0
7	00	0	6

FIG. 21

TRANSMISSION DESTINATION BUS ID	PROCESSING	
ID OF BUS TO WHICH THE OTHER-SIDE PORTAL IS CONNECTED	PORTAL RETURNS ack_complete FOR RESPONSE AND ack_pending FOR REQUEST. THEN, PORTAL TRANSMITS PACKET TO THE OTHER-SIDE PORTAL	
OTHER THAN ABOVE	PORTAL HAVING LARGEST VIRTUAL ID	WHEN Phy ID OF PORTAL CONNECTED TO BUS MATCHES TRANSMISSION DESTINATION BUS ID, PORTAL IGNORES PACKET. IN THE OTHER CASES, PORTAL HANDLES PACKET AS ERROR AND RETURNS ack_address_err
	OTHER THAN ABOVE	PORTAL IGNORES PACKET (IT IS EXPECTED THAT ANOTHER PORTAL APPLIES PROCESSING)

FIG. 22


100
CPU
101
MEMEORY
102
HOST BUS
103A
103B
DMA CONTROLLER SECTION
106A
106B
FIFO SECTION
107A
107B
LINK CORE SECTION
108A
108B
104A
104B
PHY SECTION
105A
105B
(1394 BUS)
(1394 BUS)